

**Science and Instrumentation at
Los Alamos National Laboratory**

**Testing to Assure
NASA Mission Success**

STUDENT ACTIVITY

BACKGROUND INFORMATION

Consumer product testing is an important part of the manufacturing industry. Before a product hits the shelves at your local store, similar items have been put through a variety of tests to make sure that they function properly and are safe. Likewise, before instruments fly into space aboard a spacecraft, prototypes are put through a series of tests to make sure they will function properly in the harsh environment of space. This video provides information about how instruments were tested prior to their use for the Genesis mission.

PROCEDURE

- As you view the video, indicate the type of testing shown. Describe the item that is being tested. Fill in the left-hand column only.

| Item Being Tested | How the Item is Tested | Why is the Item Tested? |
|-------------------|------------------------|-------------------------|
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QUESTIONS

For each of the following questions, write your response in complete sentences.

1. Read the interview of Roger Wiens (location here). What is his educational and professional background? (e.g. academic, interests, motivation).
2. Describe some of the team members at Los Alamos National Laboratory that have worked on these tests for Genesis instrumentation.
3. Read about the Los Alamos National Laboratory at <http://www.lanl.gov/worldview/organization/>. Write a description of the laboratory based on this text.

Read the following passage before responding to question 4:

The testing that occurred on these instruments varied based on the types of instruments that were going to be used. Since the ion and electron monitors have flown on other missions, all of the testing that was done was completed on a preflight model. Since this is the first time that the concentrator has been used in a mission, three models were built and tested. First a prototype concentrator was built and placed into a vacuum chamber to test and verify that the electronics performed properly. Next the engineering model was built and subjected to the environmental conditions of space using a vibration chamber and a thermal vacuum chamber. Finally, the flight model was built that was integrated with the Genesis spacecraft.

